



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

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MEMORANDUM

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DATE: September 29, 1993

SUBJECT: Risk Review Comments on Human Health Aspects
Olin Corporation McIntosh Plant, Alabama

FROM: Julie W. Keller, Toxicologist *JWK*
Office of Health Assessment

TO: Kenneth A. Lucas, Remedial Project Manager
South Superfund Remedial Branch

THROUGH: Elmer W. Akin, Chief *EWA*
Office of Health Assessment

Per your request, I have reviewed the **Remedial Investigation Report** document for the NPL Site. My comments provided below are divided into two sections, i.e., (1) comments specifically to you the RPM and (2) comments that, if you concur, can be conveyed verbatim to the party responsible for preparation of the document. To facilitate the verbatim conveyance, I will be pleased to provide on request a copy of this memo via cc: mail.

General Comments to the RPM

It is the policy of the EPA Region IV Office of Health Assessment to require written responses to review comments provided by this office. If a meeting with the PRP is to be held to discuss these comments, we request that written responses be provided prior to such a meeting. We also request that any risk assessment comments received from the State or any other source be provided to the Office of Health Assessment for our site file. If risk comments from sources other than this office are forwarded to the PRP contractor, the source should be clearly identified unless concurrence of this office is sought. In this case, we should formally review these comments and provide you with our response before they are forwarded.

Comments to be Conveyed to the Responsible Party

Section 6.3.5. Remedial Goal Options

Remedial goal options (RGOs) are not the same as preliminary remediation goals (PRGs). Preliminary remediation goals are

established at scoping for toxic substances known to be present at the site. Calculation of PRGs should be done in accordance with "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual, Part B. Development of Risk-based Preliminary Remediation Goals." RGOs should be developed by rearranging the site-specific average-dose equation used in the baseline risk assessment to solve for the concentration term; RAGS Part B is not appropriate at this stage in the risk assessment process (see attached article "Development of Preliminary Remediation Goals, Remediation Goal Options and Remediations Levels" for more information).

Section 6.4.2, Identification of Chemicals of Potential Concern, page 6-7

Paragraph 3 should be changed to reflect that potential exposure scenarios are not of consideration in the selection of chemicals of potential concern. It is unclear why data summary tables are not presented for all media sampled; surface soil is noticeably absent from the list of media presented in paragraph 3.

Section 6.4.2.2, Chemicals of Potential Concern, OU-2 Surface Water, page 6-11

the basis for the statement that arsenic is present at levels that approximate background concentrations at the site is unclear. No background data is shown in Table 6-3. What is the reference for background concentrations at the site?

Section 6.4.2.2, Chemicals of Potential Concern, Other Media, page 6-11

Surface soil data should be presented in a tabular format similar to that of other media.

Section 6.5.1.3, Potential Receptor Populations, page 6-14

Evaluation of onsite soil exposures should be added to the end of the first paragraph. The second paragraph of this section should be revised to more clearly present the receptor populations. As stated previously, the child scenario should be for a child aged 0 to 6 years.

Section 6.5.1.4, Exposure Points, page 6-15

Much of the information included in this section is relative to uncertainties involved in the risk assessment process. The discussion of uncertainties should be moved to the uncertainties section.

Section 6.5.2, Exposure Point Concentrations, pages 6-21 through 6-25

The first bullet in this section states that wells considered non-potable were included in the assessment; it should be noted that the facility considers these wells non-potable due to chloride contamination from site related activities. The 10 percent adjustment factor applied to the mercury exposure point

concentration, in the second bullet, to account for the limited time any industrial worker would be present in the area of mercury contamination should be removed from this bullet. It is not appropriate to adjust the concentration relative to exposure duration or frequency issues; these adjustment should be in the intake equation and not in the exposure point concentration. Similarly, the exposure point concentrations for dermal exposures to surface water, domestic well water, and groundwater should not be calculated using chemical-specific dermal permeability constants; the chemical-specific dermal permeability constants should be used in the intake equation. This reviewer was unable to locate the chemical-specific dermal permeability constants referenced to Appendix N4. ✓

Section 6.5.3.1, Quantifying Reasonable Maximum Exposures, page 6-25

A statement should be added to the first paragraph of this section indicating the NCP requirement that all remedial decisions are to be based on the RME scenario. ✓

Section 6.5.3.2.3, Groundwater Ingestion Exposure Assumptions, page 6-28

Assumptions for the average scenario are more appropriately presented in an appendix rather than the main body of the report. ✕

Section 6.5.3.2.4, Dermal Exposure Assumptions, pages 6-28 through 6-31

This reviewer was unable to assess the application of the dermal permeability constants, listed in bullet 4, to the calculation of chemical intakes. Additionally, these values should be referenced. A review of Appendix N4 indicates that a permeability constant of 1 was used in the intake factor equation for adult dermal contact with domestic well water and a permeability constant of 0.015 was used for adolescent dermal contact with surface water. Much of the information presented in bullet 5 should be moved to the uncertainties section of the document. Bullet 8 should be removed from the text since matrix effect factor is included in the absorption factors of 1.0% for organics and 0.1% for inorganics. ✓ ?

Section 6.5.3.2.5, Soil Ingestion Exposure Assumptions, page 6-31

The soil ingestion rate for adults in the residential scenario should be 100 mg/day not 50 mg/day. As previously stated, young children (0-6 years) should be evaluated for the future residential on-site scenario. The child ingestion rate should be 200 mg/day for a child aged 0 to 6 years. By presenting the child as aged 0 to 20 the childhood ingestion of 200 mg/day is diluted over 20 years resulting in a much lower HI for soil ingestion. For example, the HI for ingestion of surface soil from OU-1 for the RME scenario increased from 2 to 5 by eliminating the 20 year dilution. ✓

Section 6.5.4.2.6, Fish Ingestion Exposure Assumptions, page 6-35
The matrix effect should be eliminated from the fish ingestion exposure assumptions. ✓

Section 6.7.2.2, Risk Calculations, page 6-49
Reference to the average scenario should be removed from this section. A discussion of the average scenario is appropriate in the uncertainties section along with presentation of the data in an appendix. ✓

Section 6.8, Remedial Goal Options, page 6-54
In this section and throughout the document the distinction between "likely future" and "hypothetical future" should be eliminated. PRGs are not RGOs; see comments on Section 6.3.5 relative to the development of RGOs. RGOs should be developed for each scenario with pathways exceeding a 10^{-4} risk level or a HI of 1. For this site this would include both the child resident and the adult resident scenarios. The criteria for inclusion of individual chemicals should be those exceeding the 10^{-6} (not 10^{-4}) risk level and those with HQs exceeding 0.1. The site-specific risk equations should be rearranged to solve for the concentration in the development of RGOs; RAGS Part B should not be used. ✓

Section 6.9.2.3, Data Evaluation, page 6-56
As stated previously, benzene should not be included in the contaminants of potential concern for sediments since it was not detected in this media. ✓

Section 6.9.5, Remedial Goal Options, page 6-66
This section contradicts Section 6.8 in that this section indicates that site-specific assumptions were used in the calculation of RGOs while Section 6.8 indicates that the procedures in RAGS Part B were utilized for the development of RGOs. Also, the PRG terminology should be eliminated from this section. ✓

Table 6-1
Footnote 2 does not make sense. ✓

Table 6-2
It is unclear if the data in this table is surficial soil or sediments data. ✓

Table 6-6
The format of this table should follow RAGS Exhibit 5-7. Also, data summary tables should be presented for all media included in this table. ✓

Table 6-10
As stated previously, benzene should not be included in the contaminants of potential concern for sediments since it was not detected in this media. ✓

Table 6-14

This table should reference the permeability constants.

Table 6-16

The adult resident and resident/trespasser ingestion rates should be 100 mg/day. The parameters for the child should be changed as follows: 200 mg/day soil ingestion, 6 year exposure duration, 15 kg body weight, and 2190 days averaging time.

Section 6 Tables

The child body weight, exposure duration, ingestion rates and noncarcinogenic averaging times should be changed as per the Table 6-16 comment.

Table 6-33

The referencing included in this table is unclear. As previously stated, this table should indicate which values were obtained from IRIS and which values were obtained from HEAST since the different sources receive different levels of EPA validation. As currently presented many of the values are referenced to both IRIS and HEAST; IRIS and HEAST do not duplicate the same toxicity values. It is unclear why a RfD was developed for lead; lead exposures should be addressed using the UBK model for children. It is inappropriate to add insignificant "0's" to slope factors and RfDs.

Table 6-34

The presentation of 0.00E+0 values in this table should be eliminated. If these pathways are not complete for carcinogenic exposures NA should replace 0.00E+0. Per RAGS, all risk values and HI values should be presented in one significant figure. An additional summary table should be presented in addition to this table. This summary table should include the chemical specific risks for each chemical of concern in all pathways which exceed the 10^{-4} risk level or HI of 1 (chemicals which do not exceed 10^{-6} risk level or a HQ or 0.1 do not need to be included in this table).

Table 6-35

In this table and throughout the document the distinction between "likely future" and "hypothetical future" should be eliminated. Footnote 1 should be removed. The title should be changed to Remedial Goal Options and all references to PRG should be eliminated. The limiting criteria in footnote 3 should be 10^{-6} not 10^{-4} .

Figures 6-1 and 6-2

It is unclear why many of the pathways considered complete but insignificant in the previous version of this document are now listed as incomplete. Are these pathways complete; what was the basis for any change? The heading in this table should be edited to clearly state that the future child and adult resident are onsite residents.

Appendix N4

The subchronic headings should be removed from all tables in this appendix. Also, the presentation of "0.00E+0" as subchronic HIs should be eliminated.

Throughout this document numbers are often presented with insignificant digits added to the significant portion of the number resulting in a number that appears more significant than is appropriate. Insignificant zero values are often added to the right of the decimal in presenting RfDs and CSFs; RfDs and CSF should be presented in the form the reference cites. Per RAGS guidance all risk, HI and HQ values should be presented in one significant figure.

The tables and figures in this document should be included in the pagination.

If I can be of further assistance or if you have any questions please contact me at 347-1586.

Development of Preliminary Remediation Goals, Remedial Goal Options, and Remediation Levels

GIETechS Article by Julie W. Keller
Office of Health Assessment
Waste Management Division

The Office of Health Assessment (OHA) issued a supplemental guidance to "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part A)" titled "Supplemental Region IV Risk Assessment Guidance" in March 1991. Additional guidance has been added to this supplement from time to time. The evolution of risk assessment is continually ongoing and the OHA sees the need for a more extensive updated guidance. It is anticipated that this new guidance will be developed in the next few months. One clarification to appear in the new risk assessment guidance is the development of Preliminary Remediation Goals (PRGs), Remedial Goal Options (RGOs) and Remediation Levels (RLs).

Preliminary Remediation Goals (PRGs) are established at scoping for toxic substances known to be present at the site in order to provide a basis for the feasibility study consideration of all appropriate remedial alternatives that may achieve the target levels. PRGs serve as the basis of the development of the sampling and analysis plan to ensure that the proposed methods will achieve adequate quantitation limits. PRGs are based on ARARs or risk-based calculations to set concentration limits. The use of PRGs will limit the number of alternatives included in the feasibility study and streamline the process. Calculation of PRGs should be done in accordance with "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual, Part B, Development of Risk-based Preliminary Remediation Goals." PRGs are intended as initial guidelines and do not establish that cleanup to these goals is warranted.

The baseline risk assessment should include a section which outlines the remedial goal options (RGOs) for the contaminants and media of concern. This section should include both ARARs and health based cleanup goals. This section should contain a table with media cleanup levels for each chemical that contributes to a pathway that exceeds a 10^{-4} risk (or what ever risk level is chosen as the remediation "trigger" by the risk manager) or HI of 1 or greater for each scenario evaluated in the baseline risk assessment. Chemicals contributing risk to these pathways need not be included if their individual carcinogenic risk contribution is less than 10^{-6} or their noncarcinogenic HQ is less than 0.1. The table should include the 10^{-4} , 10^{-5} , and 10^{-6} risk levels for each chemical, media and scenario (land use) and the HQ 0.1, 1 and 10 levels as well as any ARAR values (state and federal). The values should be developed by rearranging the site-specific average-dose equation used in the baseline risk assessment to solve for the concentration term; RAGS Part B is not appropriate at this stage in the risk assessment process. The purpose is to provide the RPM

with the maximum risk-related media level options on which to develop remediation aspects of the Feasibility Study and Proposed Plan.

Remediation Levels (RLs) are chosen by the risk manager for the chemicals of concern and are included in the Proposed Plan and the Record of Decision. These numbers derived from the RGOs are no longer goals and should be considered required levels for the remedial actions to achieve.